

REMARKS

Status of the claims

Prior to entry of this amendment, claims 99-119 were pending of which claims 114-117 were withdrawn from consideration.

Claim 105 is cancelled herein without prejudice or disclaimer of Applicant's right to pursue the cancelled subject matter in a continuing application.

Claim 99 is amended herein to recite the limitation of cancelled claim 105, e.g., "wherein said anti-freeze protein comprises an alanine rich motif." No new matter is added by way of this amendment.

Claims 99, 100, 112, 114 and 118 are amended herein to recite that said enzyme is a recombinant enzyme. Applicants respectfully assert that an ordinarily skilled artisan would recognize that real-time PCR and the like utilize recombinant enzymes, and thus, a solution comprising a recombinant enzyme is inherently described in the specification as filed. *See, e.g., id.* at ¶¶ [0045], [0048] (indicating that AFP can enhance signal amplification and sensitivity during real-time PCR and increase stability of enzyme solutions employed in nucleic acid amplification reactions.) Accordingly, the amendment finds support in the application as filed, and no new matter is added by way of this amendment. *See* MPEP § 2163 (stating "[t]here is no *in haec verba* requirement, newly added claim limitations must be supported in the specification through express, implicit, or inherent disclosure.")

Objections

Applicants thank the Examiner for pointing out the informalities on page 15, line 30 and page 17, line 9. These informalities have been corrected. In particular, paragraphs [0079] and [0084] have been amended to include the PCT Application number of the co-pending application titled "dUTP BASED COMPOSITIONS FOR REDUCING PRIMER-DIMER FORMATION DURING NUCLEIC ACID AMPLIFICATION," and filed February 4, 2005, which is PCT/US2005/003567. No new matter is added by way of this amendment.

Rejections

35 U.S.C. § 112, second paragraph

Claim 112 is rejected under 35 U.S.C. § 112, second paragraph as allegedly failing to point out and distinctly claim the subject matter which Applicant regards as the invention. In particular, it is alleged that there is insufficient antecedent basis for “the nucleic acid amplification reaction.” Without acquiescing to the allegation, and solely for the purpose of expediting prosecution, claim 112 is amended herein to recite “a nucleic acid amplification reaction in said reaction mixture.” Support for the amendment may be found in the specification as filed, *see, e.g., Specification*, at ¶ [0058]. Accordingly no new matter has been added by way of this amendment. Applicants respectfully assert that the present claims satisfy the requirements of 35 U.S.C. 112, and respectfully request withdrawal of the rejections on this basis.

35 U.S.C. § 102

Claims 99-106, 111, and 112 are rejected under 35 U.S.C. § 102 as allegedly anticipated by Rubinsky et al. (PCT Publication No. WO92/12722). The Examiner states that “Rubinsky teaches a solution comprising an anti-freeze protein (AFP) and an enzyme” allegedly because “oocytes naturally contain enzymes.” *Office Action dated July 22, 2010*, at p. 2. Applicants respectfully disagree and assert that Rubinsky et al. do not teach each and every element of claim 99. *See* MPEP § 2131 (stating “[t]o anticipate a claim, the reference must teach every element of the claim.”) In particular, without acquiescing to the allegation and solely for the purpose of expediting prosecution, independent claim 99 is amended herein to recite that the enzyme is a recombinant enzyme. Applicants respectfully assert that Rubinsky et al. do not expressly or inherently disclose a solution comprising a recombinant enzyme. Accordingly, the claims are novel over Rubinsky et al. As such, Applicants respectfully request withdrawal of the rejections on this basis.

Claims 99-101, 107, 112 are rejected under 35 U.S.C. § 102 as allegedly anticipated by Demmer et al. (U.S. Patent No. 7,132,263). Without acquiescing to the allegation, and solely for the purpose of expediting prosecution, claim 99 is amended to incorporate the limitations of claim 105, which was considered novel over Demmer et al. Accordingly, claim 99 as amended is also novel over Demmer et al. As such, Applicants respectfully request withdrawal of the rejections on this basis.

35 U.S.C. § 103

Claims 109 and 110 are rejected under 35 U.S.C. § 103 as allegedly obvious over Rubinsky et al. in combination with Carpenter et al. (U.S. Patent No. 4,806,343). It is acknowledged that Rubinsky et al. do not expressly teach sorbitol or trehalose. However, it is alleged that “it was well-known in the prior art that sorbitol and trehalose were common additives in protein cryoprotectant solution”. *Office Action dated July 22, 2010*, at p. 6 (citing *Carpenter et al.*, at Col. 3). It is further alleged that it would have been *prima facie* obvious “to add sorbitol and/or trehalose to the solutions of Rubinsky since the prior art demonstrates reagents as cryoprotectant additives.” *Id.* Applicants respectfully disagree.

In particular, Applicants respectfully submit that combination of Rubinsky et al. and Carpenter et al. fails to teach or suggest a solution comprising (1) a recombinant enzyme as required by claims 109 and 110 and (2) both sorbitol and trehalose as required by claim 110. *See, e.g., In re Wada and Murphy*, Appeal 2007-3733 (BPAI 2008) (confirming that obviousness requires a suggestion of all limitations in a claim) (citing *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003)).

First, Applicants reiterate that Rubinsky et al. fail to teach a solution comprising a recombinant enzyme. Applicants respectfully submit that this deficiency is not overcome by Carpenter et al., i.e., Carpenter et al. also fail to teach or suggest a composition comprising a recombinant enzyme. Accordingly, since claim 1 is not obvious over Rubinsky et al. in view of Carpenter et al., claims 109 and 110 are also not obvious over the cited art. *See* MPEP § 2143.03 (stating “[i]f an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious.”)(citing *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988)).

Further, Carpenter et al. teaches away from a solution comprising both sorbitol and fructose, as required by claim 110. *See* MPEP § 2143.03.VI (stating “[a] prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention.”) (emphasis in original). In particular, Carpenter et al. teach a cryogenic protectant comprising one carbohydrate, such as sorbitol or trehalose, and a transition metal ion. *See id.* at Col. 4, lines 1-6, Examples I-IV, VII (teaching a solution with ZnSO₄ and trehalose only); *see also* Example V-VI, Table 2 (teaching a solution with trehalose or sorbitol). Accordingly, claim 110 is also not obvious over Rubinsky et al. and Carpenter et al. since the latter teaches away from combining trehalose and sorbitol in the same solution.

Applicants respectfully submit that claims 109 and 110 are not obvious over Rubinsky et al. in view of Carpenter et al. because such combination (1) does not teach or suggest all the claim limitations and (2) because Carpenter et al. teaches away from the invention claimed in 110. Accordingly, Applicants respectfully request withdrawal of the rejection on this basis.

Claim 113 is rejected under 35 U.S.C. § 103 as allegedly obvious over Neilson et al. (U.S. Patent No. 5,605,824) in view of Rubinsky et al. Although it is acknowledged that Neilson et al. do not teach an anti-freezing protein, it is alleged that it would have been *prima facie* obvious “to add the AFP of Rubinsky to the solutions of Neilson since Rubinsky demonstrates their AFP as an effective anti-freezing component” and “Neilson teaches an SSB/PCR composition comprising: DNA polymerase . . . and an anti-freezing component.” *Office Action dated July 22, 2010*, at p. 7 (citing *Neilson et al.*, at Col. 18). Applicants respectfully assert that the claims are not obvious over Neilson et al. in view of Rubinsky et al. because such a combination would render Neilson et al. unsatisfactory for its intended purpose. *See* MPEP § 2143.01.V. (stating “[i]f proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.”)

In particular, Neilson et al. state “[t]he SSB/PCR composition of the present invention also preferably includes an anti-freezing agent at a concentration sufficient to prevent freezing of the composition at at least -30 degrees centigrade.” *Id.* at Col. 18 (emphasis added). However, addition of an AFP according to Rubinsky et al. would not prevent freezing at at least -30 degrees centigrade. In fact, an AFP according to Rubinsky et al. allows cells or tissues to freeze at temperatures below -0.5 degrees centigrade. *See id.*, at p. 1, lines 15-18. Since Neilson et al. include an anti-freezing agent to prevent freezing, and since the AFP according to Rubinsky et al. would not achieve this result, modification of Neilson et al. as proposed by the Examiner would render Neilson et al. unsatisfactory for its intended purpose. Accordingly, Applicants respectfully submit that claim 113 is not obvious over Neilson et al. in view of Rubinsky et al. As such, Applicants respectfully request withdrawal of the rejection on this basis.

Claims 118 and 199 are rejected under 35 U.S.C. § 103 as allegedly obvious over Rubinsky et al. and Stratagene (“Gene Characterization Kits” 1988). In particular, although it is acknowledged that Rubinsky et al. do not expressly teach kits of reagents, the “Stratagene catalog provides a supportive teaching that highlights a motivation to combine reagents into kit format.” *Office Action dated July 22, 2010*, at p. 7. It is further alleged that it would have been

prima facie obvious “to combine the reaction reagents as taught by Rubinsky into a kit format as taught by Stratagene.” Applicants respectfully disagree.

In particular, Applicants note that claim 118 and 119 require a kit comprising a recombinant enzyme. As discussed above, Rubinsky et al. do not teach a solution comprising recombinant enzyme. Accordingly, combining the reaction reagents as taught by Rubinsky et al. into kit format would not result in the kit as claimed in the claims 118 and 119. Applicants respectfully note that a copy of the cited Stratagene catalog was not provided. Further, Applicants could not find a copy of the citation. Regardless, based on the citations of Stratagene provided by the Examiner, Applicants respectfully submit that Stratagene does not overcome the deficiency of Rubinsky. Accordingly, Applicants respectfully request withdrawal of the rejections on this basis.


Having distinguished the independent claims from the art of record, Applicants submit that the claims dependent therefrom are patentable for at least the same reasons. However, Applicants reserve the right to separately address the patentability of those claims in the future, should that be necessary.

CONCLUSION

Applicants respectfully submit that the instant application is in condition for allowance. Entry of the above amendment and an action passing this case to issue is therefore respectfully requested. In the event that a telephone conference would facilitate examination of this application in any way, the Examiner is invited to contact the undersigned by telephone at (415) 356-3064 or by fax at (415) 356-3099.

Respectfully submitted,
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